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Policies and Procedures

Title: Guidelines and Precautions to be Taken by Personnel in Storing, Using, Handling, and Disposing of Agricultural Chemical Pesticides

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This Directive states Guidelines and Precautions needed in storing, using, handling, and disposing of Agricultural Chemical Pesticides.

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1. References

Pesticide applicator training manuals as developed by State pesticide coordinators.

2. Summary

Stated are policy, procedures, responsibilities, definitions, and guidelines for personnel who store, handle, use, and dispose of agricultural chemical pesticides.

The provisions of this DIRECTIVE will be implemented at all ARS locations where agricultural chemical pesticides are utilized in either the laboratory, greenhouse, or the field. Specific operational procedures to implement these provisions will be developed at each location where these chemicals may present a potential hazard.

3. Abbreviations

- CFR - Code of Federal Regulations
- EPA - Environmental Protection Agency
- RCRA - Resource Conservation and Recovery Act

4. Authorities

- CFR Title 40, Chapter 1, Parts 165, 170, and 171
- Federal Register Volume 45, Number 65, Page 21703-21705 April 2, 1980
- Department of Agriculture Federal Agency Plan; Certification of Applicators of Restricted Use Pesticides (April 2, 1980)

5. Definitions

Container means any package, can, bottle, bag, barrel, drum, tank, or other containing-device (excluding spray applicator tanks) used to enclose a pesticide or pesticide-related waste.

Seal means to enclose a pesticide, and its container if appropriate, in an impervious container made of plastic, glass or other suitable material which will not be chemically degraded by the contents. This container then should be sealed within a durable container made from steel, plastic, concrete, or other

suitable material of sufficient thickness and strength to resist physical damage during and subsequent to burial or storage.

Pesticide means (1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

Excess pesticides means all pesticides for which there is no longer a need in experimental programs planned and supervised by ARS scientists or for routine use.

Organic pesticides means carbon-containing substances used as pesticides, excluding metallo-organic compounds.

Inorganic pesticides means noncarbon-containing substances used as pesticide

Metallo-organic pesticides means a class of organic pesticides containing one or more metal atoms in the structure.

Radiolabelled pesticides means a pesticide containing a radioisotope to mark a particular molecule or atom. Radiolabelled pesticides are covered in USDA's Radiological Safety Handbook, June 1975 and are not a part of this DIRECTIVE.

Pesticide incinerator means any EPA approved installation capable of the controlled combustion of pesticides, at a temperature of 1000°C (1832°F) for two seconds dwell time in the combustion zone, or lower temperatures and related dwell times that will assure complete conversion of the specific pesticide to inorganic gases and solid ash residues. Such installation complies with the EPA Guidelines for the Thermal Processing of Solid Wastes as prescribed in 40 CFR Part 240.

Sanitary landfill means a disposal facility¹ employing an engineered method of disposing of solid wastes on land in a manner which minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying cover material at the end of each working day.

Specially designated landfill means a landfill² in which complete long-term protection is provided for the quality of surface and subsurface waters from pesticides, pesticide containers, and pesticide-related

¹Such facility complies with the EPA Guidelines for the Land Disposal of Solid Wastes as prescribed in 40 CFR Part 241.

²Such facility complies with the EPA Guidelines for the Land Disposal of Solid Wastes as prescribed in 40 CFR Part 241.

wastes deposited therein, and against hazard to public health and the environment. Such sites should be located and engineered to avoid direct hydraulic continuity with surface and subsurface waters, and any leachate or subsurface flow into the disposal area should be contained within the site unless treatment is provided. Monitoring wells should be established and a sampling and analysis program conducted. The location of the disposal site should be permanently recorded in the appropriate local office of legal jurisdiction.

Triple rinse means the flushing of containers three times, each time using a volume of normal diluent equal to approximately 10 percent of the container's capacity, and adding the rinse liquid to the spray mixture.

Certified applicator means any individual who is certified under the Federal Insecticide, Fungicide, and Rodenticide Act, Section 4 (Use of Restricted Use Pesticides; Certified Applicators), as authorized to use or supervise the use of any pesticide which is classified for restricted use.

Agricultural chemical pesticide means a chemical pesticide used in agriculture.

Restricted use pesticide means a pesticide which, as specified on its' label, can only be applied by a certified applicator or person under the direct supervision of a certified applicator.

Pesticide category means the general classification into which a pesticide falls, e.g., organic phosphates, chlorinated hydrocarbons, metallo-organics (excluding organic mercury, lead, cadmium and arsenic), metallo-organics containing mercury, lead, cadmium, and arsenic, etc.

17 **Signal word** means the word appearing on a pesticide label which describes the approximate toxicity. Each label must bear the appropriate signal word, DANGER, WARNING, or CAUTION.

Re-entry time means the time period as designated on a pesticide label which must expire before a person without protective clothing may enter an area or site at, in, or on which a pesticide has been applied.

Toxic means that a substance or mixture of substances can cause adverse effects.

Pesticide waste means any pesticide or diluted pesticide which is to be discarded.

6. Policy

It is ARS policy to store, handle, use, and dispose of pesticides and containers so as to minimize risks to employees, the general public, domestic animals, wildlife, and the environment.

7. Objectives

To provide ARS employees with policies, guidelines, and procedures on the storage, handling, use, and disposal of pesticides and containers. This includes safe use of pesticides in laboratories, greenhouses, and the field.

8. Responsibilities

Supervisors will:

- Monitor the storage, handling, use, and disposal of pesticides and containers and require employees at locations to follow the guidelines in this DIRECTIVE.
- Arrange for medical tests to monitor the health of employees who are exposed to pesticides as a part of their job responsibilities as specified in DIRECTIVE and MANUAL 235.1, Occupational Health Maintenance Program.
- Ensure that personal protective equipment and clothing as specified in DIRECTIVE 230.5, Personal Protective Equipment and Clothing, and other safety devices are available and used by personnel involved in the storage, handling, use, and disposal of pesticides and containers and in cleaning protective clothing and devices.
- Ensure that pesticide application equipment is calibrated and is in proper working order.
- Ensure the annual monitoring of pesticide storage areas and waste disposal sites under their supervision to be certain that they conform to ARS directives and to State and Federal regulations. Environmental monitoring can be obtained through the Area Safety and Health Manager and should be performed at least once each year for highly toxic chemicals.

Employees will:

- Alert their supervisor immediately of any deviation from the prescribed standard operating procedures. It is the employee's responsibility to report spillage, improper ventilation, leakage, etc., to their supervisor as quickly as possible (within 24 hours).
- Ensure that the storage, use, handling, and disposal of pesticides and containers are managed so as to minimize risks to other employees, the general public, domestic animals, wildlife, and the environment.

Location Leaders and Research Leaders will:

- In consultation with scientists and the Area Safety and Health Manager, and where they exist, Location Safety and Health Committee, establish and maintain operational procedures for the safe storage, handling, use, and disposal of agricultural chemicals at their location. These operational procedures will comply with the requirements and regulations of the U.S. Environmental Protection Agency and the Occupational Safety and Health Administration.
- Develop training programs for all personnel storing, handling, using, and disposing of pesticides and submit them to the Area Safety and Health Manager for review. NOTE: Employees should be retrained every 3 years.
- Arrange for the necessary training for those employees requiring certification under this DIRECTIVE.

9. General Requirements

Personnel storing, handling, using, and disposing of restricted use pesticides will be trained and certified under an approved State plan. Where necessary, employees can be trained and certified under a USDA Agency plan for certification.

The quantity of pesticides maintained in storage will be limited to amounts required for annual program use. Stockpiling of pesticides is not allowed. At the completion of a project day's work, all unused pesticides and empty containers must be returned to the storage facility.

When pesticides are utilized by ARS employees in the practices of pest control they will use pesticides labeled for general use where possible. If restricted use pesticides are utilized, they will be applied by a certified applicator or under the direct supervision of a certified applicator. Pesticide applications will be made in accordance with the directions on the label and all precautions on the label will be followed.

Where pesticides are included in research programs to evaluate their pesticidal, environmental, or health effects, these pesticides shall be applied and evaluated under the direct supervision of a scientist engaged in pesticide research who is familiar with the toxic and environmental properties of pesticides. For instance, a scientist who has been certified to use restricted use pesticides would be considered as being familiar with toxic and environmental properties of pesticides. Appropriate precautions will be taken in the application and handling of these pesticides for either general or restricted use pesticides according to their toxicity and potential adverse impact on the environment.

10. Training and Certification of Personnel (Applicators)

- For personnel who handle only registered general use pesticides, the following minimum training is necessary. It is also desirable that personnel be familiar with information available to users of restricted use pesticides given in second bulleted paragraph of this section below.
 - Interpretation of the pesticide label.
 - Precautions in handling the concentrate chemical and mixing of chemicals for dilution.
 - Instructions in calculations for mixing a finished spray.
 - Application equipment calibration and decontamination.
 - Safe methods of disposal and storage.
- For persons who handle restricted use pesticides or unlabeled candidate pesticides the supervisor or applicator must be certified through a State certification program. Persons who are handling restricted use pesticides and not certified must be under the direct supervision of a certified applicator and receive training as in first bulleted paragraph above and additional training in:
 - Safety precautions for handling highly toxic pesticides.
 - Symptoms of pesticide poisoning.
 - First aid for pesticide poisoning and locations for medical assistance.
 - Ecology and environmental considerations in handling pesticides.
- Certification of Applicators.
 - Personnel requiring certification within ARS must meet the established qualifications within their State of residence as a certified applicator in Category X (Research and Demonstration).
 - If the assigned duties of the applicator are specialized in their function, and subject to the discretion of the supervisory personnel, the applicator may be further required to meet the established State qualifications within that specialized category of certification, i.e., ornamentals, livestock, etc.

- If the applicator is not certified, the applicator shall demonstrate under personal supervision of the certified applicator to be competent to carry out the duties of pesticide handling and application in a responsible and sensible manner. The applicator's safety conduct shall be the responsibility of the certified applicator.

11. Operational Procedures

Each location in ARS where pesticides are utilized shall develop a set of operational procedures for the employees at that location. These operational procedures should be developed by the location leader, research leader, and the scientists involved in the use of the pesticides. Each location may have specific needs for pesticide uses. These may vary from location to location; therefore, general operational procedures cannot be developed. However, the operational procedures should cover as a minimum: (1) guidelines for storage and transport of pesticides, (2) guidelines for emergencies or accidents related to pesticides, (3) methods of equipment calibration and decontamination, (4) methods of storage and disposal of concentrates and diluted pesticides, (5) training in the application, use, and environmental considerations for pesticides, (6) mechanisms for monitoring of waste disposal areas and employees where necessary, (7) safety and health procedures, (8) personal protective equipment and clothing, and (9) toxic effects and medical symptoms of overexposure.

Site Selection.

Pesticides and their containers must be stored only in facilities approved by the Area Safety and Health Manager and where consideration has been given to the hazardous nature of the pesticides, potential environmental damages, and adequate personal safety and security systems in and around the storage site.

Storage sites shall be selected according to the following criteria:

- Where flooding is unlikely,
- Where easily accessible by fire-fighting equipment,
- Located away from any Public Building or activity so that if an emergency spillage, fire, or explosion occurs, it would not cause harm to the general population,
- Located a safe distance away from any potable water supply, streams, lakes, or drainage canals that discharge to water supplies, and
- Not stored in any facility used as food/feed/fertilizer/seed storage or processing centers.

Storage Facilities.

Pesticides should be stored in a dry, well ventilated building which is separate from offices and laboratories and where fire protection is provided and protected from freezing or overheating. All

pesticides in storage must be labeled. When handling pesticides in storage facilities, employees should follow applicable safety and health procedures as outlined under paragraph “Safety and Health Procedures” of this section. The following precautions will be taken:

- Where large quantities are stored, the entire storage facility should be secured by a fence, and doors and gates should be kept locked to prevent unauthorized entry.
- Highly visible, waterproof identification signs on doors, gates, buildings, and fences to advise of the hazardous nature of contents, with telephone numbers and names for additional information will be posted in areas where they will be visible.
- Adequate fresh water supply and soap or special solvents necessary for decontamination of personnel and equipment will be available.
- Pesticide containers should be stored with the label plainly visible. If containers are not in good condition when received or if the pesticide is transferred to a small container for convenient use, the new container must be properly relabeled.
- Containers should be checked regularly for corrosion and leaks. If such is found, the contents should be transferred to a sound, suitable container and be properly labeled or the container and its contents should be disposed of.
- Materials such as adsorptive clay, granulated activated charcoal, hydrated lime, and sodium hypochlorite should be available for emergency treatment or detoxification of spills or leaks. Upon discovery of a spill or leak, isolate the contaminated area and keep out all unauthorized personnel. Allow no smoking in the area. Ventilate area thoroughly. Immediately contact your Area Safety and Health Manager and dispose of pesticide and container in an acceptable manner as outlined in this section under paragraph “Disposal of Pesticides, Pesticide Containers, and Pesticide Wastes” of this DIRECTIVE.
- Pesticides in containers which could be damaged by moisture or water will be stored off the floor. Wooden pallets should be used.
- Liquid pesticides should be stored in a manner so that a spill or leak does not contaminate nonliquid pesticides.
- Excess pesticides and containers should be segregated according to the method of disposal to ensure that entire shipments of the same class of pesticides are disposed of properly, and that accidental mixing of containers of different categories does not occur during the removal operation.

- Pesticides will be stored according to special storage requirements and compatibility properties as specified on the label, and separately from other products and materials in storage areas.
- A current inventory of all pesticides in each storage unit will be posted in an inside location accessible and visible to program personnel. This inventory will include the name(s) listed in order of toxicity category with appropriate signal words of each pesticide, the number and kind of containers, and the date each was received.
- All quantities of highly toxic and experimental pesticides will be secured in a lockable storage unit with limited access.

Transport of Pesticides from Storage to Mixing.

- Pesticides in containers and packages must be moved safely so that carelessness will not result in broken containers, spillage, and contamination. Pesticides should not be transported inside automobiles or truck cabs, and attempts should be made to avoid spills and breakage due to sharp turns or sudden stops by vehicles carrying pesticides.
- Each location should develop general procedures to follow for decontamination of vehicles in case of spills or leaks of toxic pesticides.

Safety and Health Procedures.

- A supply of soap and/or detergent and water should be readily accessible for cleanup in the case of an emergency. A minimum supply of 10 gallons of water should be available for washing off personnel and equipment exposed to sprays or spillage under field situations where water is not readily available.
- All personal protective equipment and clothing as required by the label or written Standard Operating Procedures should be worn in the handling of pesticides for storage, mixing, and application.
- Appropriate weather conditions for the application of the pesticide should prevail otherwise the pesticide applications should be delayed.
- When hazardous pesticides such as restricted use pesticides or unlabeled pesticides are utilized, two employees should work together (one as a safety and remote from exposure) in case one becomes ill, the other can seek medical assistance. Emergency personal protective equipment (e.g., coveralls, self-contained breathing apparatus) must be available.
- All precautions should be taken to avoid applying pesticides to sensitive areas such as apiaries,

lakes, streams, pastures, houses, schools, playgrounds, hospitals, or sensitive crops. Spills, runoff, or spray drift from the target area should be avoided by using care and caution.

- Prior to application, the equipment should be checked to make sure there are no leaks in the pump or tanks, hose connections, or worn spots in hoses. All spray tanks should have lids. Filling the spray tank should be done carefully so it does not run over. All machinery should be shut down if necessary to adjust or repair any moving parts. Never blow out nozzles, hoses, or clogged lines by mouth. Inspect all pesticide containers for leaks, tears, or holes before handling. Do not mishandle or abuse containers and thereby create hazards and/or emergencies by carelessness.
- All pesticides should be mixed in quantities which are adequate for the job to avoid excess dilute solutions after the job is completed. Cleanup procedures should be established at each location whereby excess sprays can be safely discarded preferably by spraying the material on an overplanting of the commodity. The equipment should be washed off both inside and outside and all pesticides and pesticide containers should be returned to a storage area immediately after use.
- At the end of the working day employees who have applied or mixed pesticides should take a shower and change clothes. Clothing should be washed after the end of the day. In no case should the same clothing, including shoes, be worn on a second day after it has been worn during a pesticide application.
- No employee shall reenter a pesticide treated area, greenhouse, or field until the adequate time as specified on the label or written Standard Operating Procedures of the pesticide has been allowed for the sprayed area. If it is imperative that employees reenter an area prior to the safe reentry time then employees shall wear the necessary protective clothing as specified on the label or written Standard Operating Procedures. For persons who regularly handle organophosphates and/or large quantities of carbamates, a chlorines/erase level should be determined at least monthly throughout the pesticide application season.
- Do not permit unauthorized persons in the storage area.
- Do not store pesticides next to food, feed, seed, fertilizer, or other articles intended for consumption or use by humans or animals. Do not store food, beverages, tobacco, clothing, eating utensils, or smoking equipment in any area where pesticides are stored or handled.
- Do not drink, eat food, smoke, apply cosmetics, or use tobacco in areas where pesticides are present.
- Wear unlined rubber gloves while handling containers and mixing or measuring pesticides.

- Do not put fingers in mouth or rub eyes while working with pesticides.
- Wash hands thoroughly with soap and water immediately after handling pesticides and, especially before eating, smoking, or using toilet.
- Where large quantities of pesticides are stored, or where conditions may otherwise warrant, the local fire department should be provided with a floor plan of the storage area indicating where different pesticide classifications are regularly stored. The fire chief should be furnished with the home telephone(s) of the person(s) responsible for the pesticide storage facility.
- Fields treated with experimental pesticides should be posted with warning signs indicating that experimental pesticides are in use.
- Pesticide storage areas should be properly ventilated.

Disposal of Pesticides, Pesticide Containers, and Pesticide Wastes.

Where ARS employees are housed under the auspices of another organization, they should comply with that organizations's requirements for handling, use, and disposal of agricultural chemicals.

- **Pesticides.**
 - Follow label directions -- Use entire contents of container according to label directions (for purposes intended at prescribed dosage rates) provided these are currently legal under Federal, State, and local laws and regulations.
 - Home and garden use pesticides -- Dispose of by securely wrapping individual containers in several layers of paper and discard in routine municipal solid waste disposal channels.
 - Return to manufacturer or distributor -- This is a preferred route especially for experimental compounds. Consider refusing experimental samples unless the company supplying them agrees in advance to accept unused material. Transportation must be according to all Federal, State and local laws and regulations.
 - Canceled pesticides -- EPA will accept for safe disposal, those pesticides, the registrations of which have been cancelled, after first having been suspended. This can usually be accomplished through your local pesticide distributor or the manufacturer. Requests for acceptance should be directed to EPA Regional Administrators, after first contacting the local distributor and manufacturer.

- For pesticides that cannot be disposed of by procedures outlined in (1) through (4), it is strongly recommended that arrangements be made with a licensed waste disposal firm for regular pickups of pesticide waste.
- The disposal and storage of most waste pesticides (those for which no pesticidal use is intended) is now regulated by the RCRA as amended, of 1976. This act requires a permit be obtained by generators of hazardous waste in excess of 1 kg/month of highly toxic compounds (defined as having LD₅₀ <50 mg/kg) and 100 to 1000 kg/month for other compounds. These requirements may vary due to State or local laws and/or changes in RCRA. Further information should be sought from State and local authorities or the RCRA hazardous waste hotline (800-424-9346) or in Washington, D.C. (202-382-3000).
- **Pesticide containers** -- Segregate into the following categories and dispose of accordingly:
 - Combustible containers (wood, cardboard, and paper) that contained organic or metallo-organic pesticides (except organic mercury, lead, cadmium or arsenic compounds) -- Dispose of in pesticide incinerator or bury in specially designated landfill. Small quantities may be burned in open fields by the user when permitted by State and local regulations, or buried singly by the user in open fields with due regard for protection of surface and subsurface water. Never burn in the open field containers that held the herbicide 2,4-D.
 - Noncombustible containers (metal, glass, and plastic that contained organic or metallo-organic pesticides (except organic mercury, lead, cadmium or arsenic compounds) -- First triple rinse. Preferably, return to manufacturer for recycling. In order to dispose of, after other measures have been exhausted, first puncture and crush rinsed container, then bury in a sanitary landfill. Rinsed containers buried in the field by the pesticide user is generally permissible. Unrinsed containers should be disposed of in a specially designated landfill, or subjected to incineration in a pesticide incinerator.
 - Containers (combustible and noncombustible) that contained inorganic pesticides or organic mercury, lead, cadmium or arsenic compounds -- First triple rinse and puncture. Dispose of rinsed containers in a sanitary landfill. Because of their persistence, the pesticides that were in these containers are especially hazardous to the environment. Unrinsed containers should be sealed and buried in a specially designated landfill.

- **Pesticide rinse water, unused spray solutions, and other dilute pesticide waste:**
 - Dispose of in the field by adding to spray mixtures and/or using per label directions. All pesticide solutions should be mixed with the intent of limiting the problem of excess solutions.
 - Concrete disposal pits are an efficient and effective method for disposing of dilute pesticide suspensions. They do, however, require a RCRA permit in most situations. An excellent information source on this subject is: Hall, C.V. 1981. Safe disposal methods for agricultural pesticide waste. Order No. PB 81-197584. It can be ordered from National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22161.
 - If methods (1) or (2) are not used, treat these solutions same as pesticides above.

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